

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

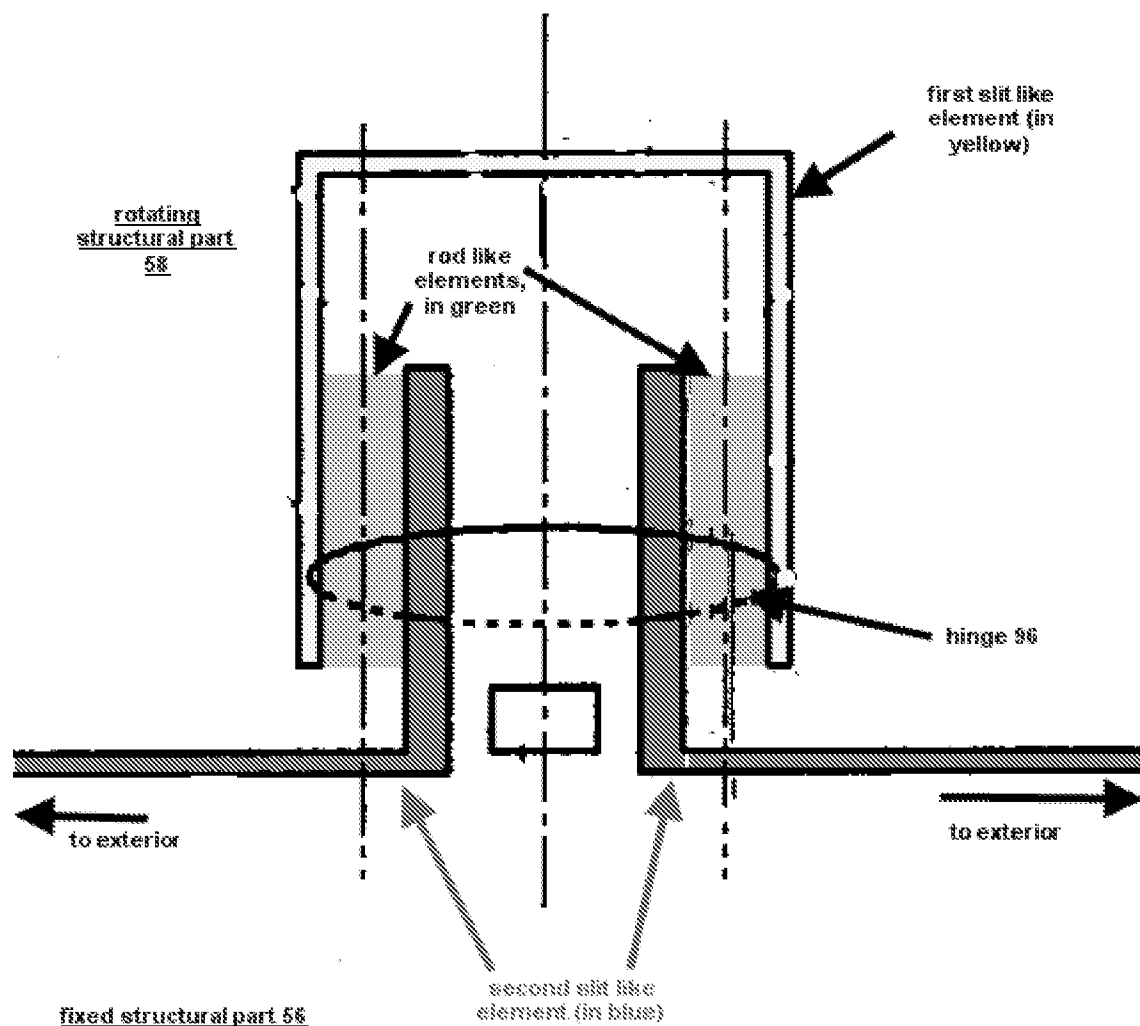
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-15 are rejected under 35 U.S.C. 102(b) as being anticipated by patent 639220 to Slater et al.

Regarding claim 1, Slater discloses an elastic hinge formed into a monolithic structure (abstract), whereby the elastic hinge 96 separates the monolithic structure in a rotating structural part (58) and a fixed structural part (56), and whereby the elastic hinge 96 allows rotation of said rotating structural part (58) relative to said fixed structural part (56, abstract), said elastic hinge being formed by forming at least one first slit-like element (102) into said monolithic structure, whereby the or each first slit-like element (102) defines the elastic hinge 96 and thereby at least one rotation axis (Y) of the elastic hinge, characterized in that at least one rod-like or plate-like element (106) is formed into said monolithic structure by forming at least one second slit-like element (L shaped slit in figure 4a) into said monolithic structure. See figure below for clarification.

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Regarding claim 2, Slater discloses the structure of claim 1, characterized in that the or each first slit-like element (102) comprises at least two segments (three segments making a U shape, figure 4a, shown above) defining a plane (X-Z), whereby the or each second slit-like element (L shaped slits) runs approximately in parallel to one segment of a corresponding first slit-like element (102) thereby defining a rod-like or plate-like element (green area, 106).

Regarding claim 3, Slater discloses the structure of claim 2, characterized in that the displacement or rotation axis (y) of the elastic hinge runs approximately perpendicular to said plane (x-z). The Slater hinge can flex in any direction.

Regarding claim 4, Slater discloses the structure of claim 1, characterized in that the or each first slit-like element (102) comprises at least two segments, whereby a first segment runs in the direction of a first axis (X) and a second segment runs mainly in the direction of a second axis (Z) being perpendicular to said first axis (X), and whereby the rotation axis (Y) of the elastic hinge runs in a direction perpendicular to said plane (X-Z) defined by the first axis (X) and the second axis (Z), shown in the above figure.

Regarding claim 5, Slater discloses the structure of claim 1, characterized in that the or each first slit-like element (102) is formed into said monolithic structure in a way that the or each first slit-like element (102) does only extend to the exterior of the monolithic structure in the direction of the rotation axis (Y) of the elastic hinge, whereby the first slit-like element (22) is completely surrounded by the monolithic structure in the direction of the axis (X, Z) defining said plane (X-Z). The first slit, as shown above, does not extend to the surface of the monolithic structure.

Regarding claim 6, Slater discloses the Elastic hinge according to claim 1, characterized in that the or each second slit-like element (in blue, above) is formed into said monolithic structure in a way that the or each second slit-like element extends to the exterior of the monolithic structure in the direction of the rotation axis (Y) of the elastic hinge and in the direction of one axis (X) defining said plane (X-Z).

Regarding claims 7 and 8, Slater discloses the elastic hinge according to claim 1, characterized in that the or each first and second slit-like elements are formed into said monolithic structure, disclosed in column 9, lines 20-25. Slater discloses anisotropic etching to form the slits (column 22, line 5). MPEP 2113 Product-by-Process Claims states that "If the product in the product-by-process claim is that same as or obvious from a product of the prior art, the claim is unpatentable even though the prior art product was made by a different process." The process by which the slits are made is not a patentable distinction.

Regarding claim 9, Slater discloses a device comprising at least one elastic hinge 96 formed into a monolithic structure of said device, whereby the or each elastic hinge 96 separates the monolithic structure in a rotating structural part (58) and a fixed structural part (56), and whereby the elastic hinge 96 allows rotation of said rotating structural part 58 relative to said fixed structural part 56 (abstract), said elastic hinge 96 being formed by forming at least one first slit-like element (102) into said monolithic structure, whereby the or each first slit-like element (102) defines the elastic hinge and thereby at least one rotation axis (Y) of the elastic hinge, characterized in that at least one rod-like or plate-like element (106) is formed into said monolithic structure by forming at least one second slit-like element (shown above) into said monolithic structure. See the diagram included regarding claim 1.

Regarding claim 10, Slater discloses a device comprising at least one elastic hinge 96 formed into a monolithic structure of said device, whereby the or each elastic hinge 96 separates the monolithic structure in a rotating structural part (58) and a fixed

structural part (56), and whereby the elastic hinge allows rotation of said rotating structural part 58 relative to said fixed structural part 56 (abstract), said elastic hinge 96 being formed by forming at least one first slit-like element (102) into said monolithic structure, whereby the or each first slit-like element (102) defines the elastic hinge 96 and thereby at least one rotation axis (Y) of the elastic hinge, characterized in that at least one rod-like or plate-like element (106) is formed into said monolithic structure by forming at least one second slit-like element (see above) into said monolithic structure characterized in that the or each elastic hinge 96 is formed according to claim 2.

Regarding claim 11, Slater discloses a monolithic structure, whereby the elastic hinge 96 separates the monolithic structure in a rotating structural part 58 and a fixed structural part 56, and whereby the elastic hinge allows rotation of said rotating structural part 58 relative to said fixed structural part 56 (abstract), by performing the following steps: a) providing a monolithic structure, b) forming at least one first slit-like element into said monolithic structure (by anisotropic etching), thereby defining an elastic hinge, whereby said elastic hinge defines at least one rotation axis (Y) of the elastic hinge, c) forming at least one rod-like or plate-like element 106 into said monolithic structure by forming at least one second slit-like element into said monolithic structure, see diagram discussed with claim 1. Given the structure disclosed by Slater as discussed above, the specific “providing” steps would inherently be met when forming the hinge of Slater.

Regarding claims 12-15, given the structure disclosed by Slater and described in the rejection claims 1-10, the specific "providing" steps would inherently be met when forming the hinge of Slater.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Slater. Slater discloses the method of claim 11, but does not disclose an Electro-Discharge machine to form the slits. Slater discloses anisotropic etching to form the slits.

Electro Discharge Machining is an obvious alternate to anisotropic etching. Since the Slater hinge is micro-machined, hand cutting the slits would be prohibitively difficult, an electro discharge machine would be an obvious alternate choice. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the slits in the hinge of Slater with an Electro-Discharge machine, since it is known in the art to use an Electro-Discharge machine to form slits.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Please see 892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EMILY M. MORGAN whose telephone number is (571)270-3650. The examiner can normally be reached on Monday-Thursday, alternate Fri, 7:30am to 5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Victor Batson can be reached on 571-272-6987. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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